

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/018461

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ F28F1/32, F25B39/00, F28D1/047

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ F28F1/32, F25B39/00, F28D1/047

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2005
Kokai Jitsuyo Shinan Koho	1971-2005	Toroku Jitsuyo Shinan Koho	1994-2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 59-153532 A (Sumitomo Light Metal Industries, Ltd.), 01 September, 1984 (01.09.84), Page 1, left column, line 19 to right column, line 20; Fig. 2 (Family: none)	1, 5, 8, 11, 12
Y		2-4, 6, 7, 9, 10, 13-20, 22-23
A		21
Y		2, 4, 6, 9, 10, 15, 23
	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 082388/1987 (Laid-open No. 190777/1988) (Tokyo Radiator Mfg. Co., Ltd.), 08 December, 1988 (08.12.88), Page 4, line 11 to page 5, line 5; Figs. 1 to 4 (Family: none)	

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
16 February, 2005 (16.02.05)

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Name and mailing address of the ISA/
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 6-101982 A (Showa Aluminum Corp.), 12 April, 1994 (12.04.94), Page 3, column 3, line 42 to column 4, line 7; Figs. 1, 9 to 11 (Family: none)	3, 4, 14, 15
Y	JP 9-145282 A (Hitachi, Ltd.), 06 June, 1997 (06.06.97), Page 12, column 21, lines 17 to 34; Figs. 12 to 14 (Family: none)	7, 19
Y	JP 9-280769 A (Sanden Corp.), 31 October, 1997 (31.10.97), Page 3, column 3, lines 43 to 49; Fig. 1 (Family: none)	15
Y	JP 54-088867 A (Sharp Corp.), 14 July, 1979 (14.07.79), Page 3, upper right column, line 14 to lower right column, line 7; Figs. 3, 5 to 8 (Family: none)	16-18
Y	JP 2001-056191 A (Kabushiki Kaisha Maruyama), 27 February, 2001 (27.02.01), Page 4, column 5, lines 21 to 32; Fig. 1 (Family: none)	20
Y	JP 9-042877 A (Sanyo Electric Co., Ltd.), 14 February, 1997 (14.02.97), Page 5, column 7, line 42 to column 8, line 18; Figs. 6 to 10 (Family: none)	22